



ESP-2 Multi-Interface Serial Hub Installation Guide

590-298-001C
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Introduction

The Equinox Ethernet Serial Provider 2-port Multi-Interface (ESP-2 MI) Serial Hub contains an autosensing 10/100 Ethernet connection and two serial multi-interface ports.

The ESP-2 MI is supported under Windows 2000, Windows XP, Windows NT 4.0, OpenServer 5.0.5a or higher, UnixWare 7.0.1a or higher, Linux and AIX 4.3 and 5.1.

Software configurable parameters are downloaded to the device via the Ethernet connection. The ESP-2 MI is configured using appropriate operating system drivers, and managed using EquiView Plus, running on any Microsoft Windows host, or espdiag and especfg for OpenServer, UnixWare, Linux or AIX. Certain configuration values are set during driver installation.

The ESP-2 MI can also be managed by using a standard web browser to access the embedded web server interface. Any browser that supports frames may be used, and the web interface is accessible from any system, regardless of operating system type.

This Installation Guide describes how to:

- Install the hardware
- Initiate driver installation
- Use the web interface

What You Get

The ESP-2 MI kit contains the items listed in Table 1.

Part No.	Description
520-312	ESP-2 MI Unit
590-298	Installation Guide (this document)
990458 (AM) - or - 990460 (EU)	External Power Supply with attached PS-to-Barrel Connector
650185	Equinox SuperSerial Software CD

Table 1. ESP-2 MI Kit Contents

An Industrial Mounting Kit (790226) is available for installing the ESP-2 MI on a DIN rail.

Hardware

Figure 1 shows the front of the ESP-2 MI.

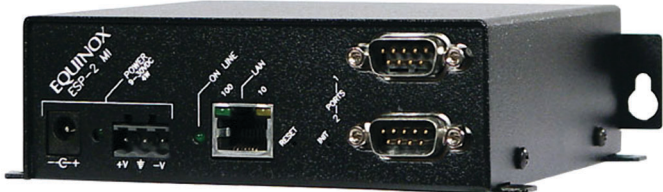


Figure 1. ESP-2 MI Front View

The lower left area of the front panel contains two electrical connectors. You may use one of these, but not both. For more information, see *Electrical*.

The LAN connector is used with a 10BaseT or 100BaseT LAN interface cable. A CAT 5 cable is required for 100BaseT operation.

The two PORTS connectors are standard DB-9 DTE ports in RS-232 mode. The unit ships with RS-232 mode enabled for both ports.

Table 2 describes the LEDs and buttons on the front panel.

Item	Description
POWER	The <i>POWER</i> LED is lit when the ESP is connected to a power source
ON LINE	The <i>ON LINE</i> LED is lit (not blinking) when the ESP self-test and initialization procedures have completed successfully
10	The <i>10</i> LED is lit when the ESP is connected to a 10 Mbps LAN, and the 100 LED blinks when traffic is present
100	The <i>100</i> LED is lit when the ESP is connected to a 100 Mbps LAN, and the 10 LED blinks when traffic is present
RESET	Pushing the <i>RESET</i> button reboots the ESP
INIT	Pushing the <i>INIT</i> button restores the ESP to factory defaults

Table 2. LEDs and Buttons

For information about using the *RESET* and *INIT* buttons, see *Reinitializing and Resetting*.

Interfaces

Each port supports the standard RS-232 DTE serial signals via a male DB-9 connector, with the exception of RI. Each port can be configured independently to support the following interfaces:

- RS-232 DTE signaling (default)
- RS-422 signaling
- RS-485 2-wire half duplex (HD) signaling

Internal jumpers are used to select the signaling for each port. For more information, see *Changing the Interface Settings*.

A software configurable option lets you enable/disable a one port option. When enabled, only port 1 is used. This option can be set during driver installation.

When RS-485 HD signalling is set via internal jumpers, software-configurable modes can be set to control the enabling/disabling of the transmitter and receiver. The choices are RTS (Request to Send) control mode or ADDC (Automatic Data Detection Control) mode.

- In RTS mode, the transmitter is enabled and the receiver is disabled when RTS is true. The transmitter is disabled and the receiver is enabled when RTS is false.
- In ADDC mode, the transmitter is enabled and the receiver is disabled when a space (zero) bit is sent. The transmitter is disabled and the receiver is enabled when a mark (one) bit is set. This mode allows rapid turnaround and release of the data pair.

The RS-485 transfer mode can be specified during driver installation or through the web interface.

When RS-422 signalling is set, the receiver and transmitter are always enabled.

Pin Assignments

Table 3 lists the pin assignments for the ports' DB-9 connectors. This information is also provided on a label on the bottom of the unit.

Pin	RS-232	RS-422	RS-485
1	DCD	RXD(+)	N/C
2	RxD	RXD(-)	N/C
3	TxD	TXD(+)	Data(+)
4	DTR	TXD(-)	Data(-)
5	GND	GND	GND
6	DSR	N/C	N/C
7	RTS	N/C	N/C
8	CTS	N/C	N/C
9	N/C	N/C	N/C

Not supported: RI, RS-422 RTS and CTS differential control signals

Table 3. Serial Port Pin Assignments

NOTE: Unused pins (labeled N/C) should not have wires attached to them. Floating wires could cause unbalanced noise, shorten overall distances and degrade performance.

Table 4 lists the pin assignments for the RJ-45 shielded Ethernet connector.

Pin	Signal
1	Transmit Data +
2	Transmit Data -
3	Receive Data +
4	*
5	*
6	Receive Data -
7	*
8	*

* These pins are usually connected in a standard Ethernet CAT 5 cable. There is special termination for those signals in the interface to eliminate any problems if they are connected.

Table 4. Ethernet Connector Pin Assignments

Electrical

The ESP-2 MI has two electrical power connectors on the front of the unit. These connectors are labeled POWER 9-30VDC 4W. You may use either one of these connectors, but not both.

- The unit ships with an external power adaptor. This adaptor includes a barrel plug that is inserted into the leftmost power connector on the unit's front panel.

- The unit also contains a 3-pin screw terminal block connector which provides connection for a 9 VDC to 30 VDC power source. The location of the positive, ground and negative pins are screened on the front panel.

Surge protection is provided for each serial port up to 15,000 volts ESD.

Technical Specifications

Table 5 lists the ESP-2 MI technical specifications.

Specification	Operating Range
Dimensions	4.75"W x 4.38D x 1.62"H
Temperature	0° -50°C (32° -122°F)
Humidity	10-90% non-condensing
Power	9-30 VDC at less than 4W

Table 5. ESP-2 MI Operating Specifications

Changing the Interface Settings

The factory default interface setting for both ports is RS-232. If you want the ports to use this interface, you may skip this section.

To enable the RS-422 or RS-485 interface for one or both serial ports (or, if you previously enabled one of these interfaces and now want to enable another interface), use the following procedure.

You will need a Phillips screwdriver. Proper electrostatic discharge (ESD) protection should be used at all times.

1. Place the ESP-2 MI unit on a flat surface.
2. Use the Phillips screwdriver to loosen the two screws on either side of the unit (total of four screws). Remove the screws.
3. Lift the cover up and off the unit. Use Figure 2 as a guide to locate the two ganged headers on the printed circuit board (PCB).
4. Each ganged header contains four columns of five pins. The jumper for each port is ganged and covers two columns.
 - Installing the jumper over the two rightmost pin columns enables the RS-232 interface.
 - Installing the jumper over the two middle pin columns enables the RS-422 interface.
 - Installing the jumper over the two leftmost pin columns enables the RS-485 2-wire HD interface.

To change a port's interface, lift the jumper off its current interface setting and place it on the columns corresponding to the desired interface setting. The interface settings are screened on the PCB.

5. If you are enabling the RS-422 or the RS-485HD interface on a port, you may also enable/disable 100 ohm termination of the differential receive signal pair on that port. This termination is enabled by placing a jumper on the 2 pins adjacent to the ganged jumper for the port; see the location noted in Figure 2. Termination is enabled by factory default, that is, the jumper covers both pins for each port.

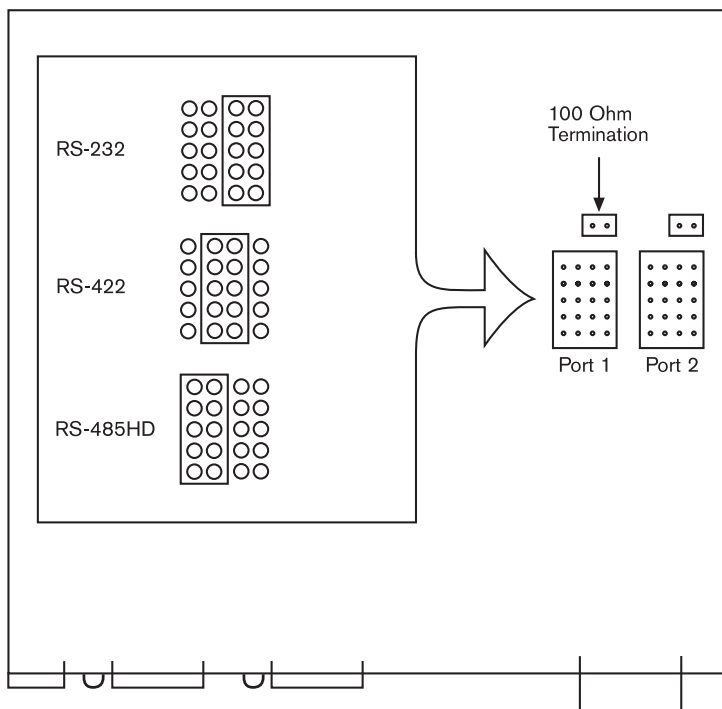


Figure 2. Jumper Locations and Settings

This termination is typically used in RS-485 environments when the device is the first or last on a multi-drop line for a 2-wire configuration. This termination should always be set when the unit is set for RS-422, as this is point-to-point configuration.

If your configuration includes supplying your own external termination, the termination on the ESP-2 MI should not be used.

To disable termination, remove the jumper entirely.

6. When the RS-485HD interface is enabled in hardware, you will be able to select the transmitter/receiver mode during startup. For more information on these software-configurable options, see *Interfaces*.
7. Replace the cover on the unit and reinstall the four screws.

Installing the Unit

The ESP-2 MI can be installed on a table, on a DIN rail or on a wall.

WARNING: The power outlet should be installed near the equipment and should be easily accessible.

The ESP-2 MI supports hot swapping, that is, you may replace an existing ESP-2 MI with a similarly configured unit without affecting the server or having to reconfigure the ports.

Installing on a Table

The unit ships ready to use in a tabletop environment. This includes four rubber feet on the bottom of the unit. At a later time, if you want to move the unit to a DIN rail or a wall installation, you can remove the rubber feet. Grasp the bottom of each foot and gently pull it down and out of the hole.

Installing on a DIN Rail

Equinox offers an Industrial Mounting Kit, part number 790226, containing hardware and instructions for mounting an ESP-2 MI on a DIN rail.

Installing on a Wall

The ESP-2 MI unit contains two sets of mounting flanges for flexibility in mounting options on a wall or other vertical surface. You will need to provide the appropriate number of screws and washers.

- You may install the unit with the bottom (that is, the side containing the large label) against the wall, using the four flanges on the bottom of the unit.
The unit ships with rubber feet installed in these flanges for tabletop installation. Remove them by grasping the bottom of each foot and gently pulling it down and out of the hole. Then, use your screws and washers to attach the unit to the wall.
- You may install the unit with the back against the wall, using the two flanges on the back of the unit. In this case, you can remove the four rubber feet on the bottom of the unit or leave them installed. Use your screws and washers to attach the unit to the wall.

With either of the above installations, you may orient the unit to best fit your configuration.

Startup Sequence

1. The MAC address is printed on a label on the bottom of the unit. This address will be used as a Unit ID to distinguish different ESP units on the network. Record the MAC address.
00 - 80 - 7D - ____ - ____ - ____
2. Attach a 10BaseT or 100BaseT LAN interface cable to the LAN connector. A CAT 5 cable is required for 100BaseT operation.
3. Attach the electrical power connector(s) to the appropriate connector on the front of the unit.
4. *Windows systems only:* Install or upgrade to EquiView Plus version 5.2 or higher from the Equinox SuperSerial Software CD.
5. Install the ESP driver for your target operating system; see *Installing and Configuring Drivers*.

Reinitializing and Resetting the Unit

The information in this section is not a normal part of the startup sequence; however, it is provided for reference if the ESP-2 MI must be reinitialized or reset.

The *INIT* button on the front panel can be used to remove configured information from an ESP unit. The ESP stores nonvolatile data such as SNMP community name, system contact and IP address in the EEPROM. This information can be erased by pressing the *INIT* button.

NOTE: Pressing the *INIT* button will interrupt ESP operation and cause reinitialization to occur.

When the *INIT* button is first pressed, the *ONLINE* LED will begin to blink to confirm that you have pressed the *INIT* button. As the *INIT* button remains pressed, the *ONLINE* LED will blink at a faster rate. After approximately 12 seconds, the *ONLINE* LED will turn off. At this point, all nonvolatile information will be reset to the factory defaults and the unit will immediately reboot.

The *RESET* button on the front panel can be used to reset the ESP. Pushing this button will cause an immediate reboot.

You may also reinitialize and reset the unit via the web interface.

Installing and Configuring Drivers

During the automated driver installation and configuration process, you may enable or disable the one port option. If you enable the one port option, all further installation and configuration operations will only affect port 1. Port 2 will be unusable and will not be shown in the configuration operations.

As described in *Changing the Interface Settings*, the port interface type (RS-232, RS-422 or RS-485) is selected by jumpers inside the unit. During software installation and configuration, the current settings for each port are displayed (if you have the one port option enabled, the display includes only port 1).

If a port's hardware jumpers are set for RS-485, the display will allow you to choose the transmitter/receiver mode: RTS or ADCC. (You may also change the RS-485 transfer mode via the web interface.) See *Interfaces* for more information. If a port's hardware jumpers are set for RS-232 or RS-422, you must change the jumper positions in the hardware to change the interface.

If you want to change the configuration after the drivers are installed, you may upgrade the drivers to enable or disable the one port option without rebooting the unit. For ports that are hardware configured for the RS-485 interface, you may also change the transmitter/receiver mode. To access these options, click the *Configure* button on the Properties page. See *Using the Web Interface* for information about values you can change and display.

The following sections contain instructions for installing the ESP drivers. The ESP is supported under Windows 2000, Windows XP, Windows NT 4.0, OpenServer 5.0.5a or higher, UnixWare 7.0.1a or higher, Linux and AIX 4.3 and 5.1.

Windows 2000 and Windows XP

To install the Windows 2000/XP ESP driver, you must first run SETUP.EXE from the Windows 2000/XP ESP driver diskette that is made using the Equinox SuperSerial CD-ROM. SETUP.EXE will install the necessary Device Manager files for the ESP. Insert the diskette into your A: drive, set your default drive to A: and run **SETUP**.

The Windows 2000 ESP driver is installed when you install the first ESP.

1. Navigate to *Settings - Control Panel - Add/Remove New Hardware*.
2. From the Add/Remove Hardware Wizard, select *Add/troubleshoot a device*.
3. Windows 2000 will search for new Plug and Play hardware on your computer. ESP devices are network-attached and are not located by the Add New Hardware Wizard. A list of devices that can be installed will be displayed. Select *Add a new device*.
4. From the Find New Hardware page, select *No, I want to select the hardware from a list*.
5. A list of hardware types will be displayed. Select *Multi-port serial adapters*.
6. Windows 2000 will ask you to select a device driver. Highlight *Equinox Systems Inc.*, select *Equinox Ethernet Serial Provider / Have Disk* and point the Wizard to your A: drive.
7. From the Select a Device Driver page, again select *Equinox Ethernet Serial Provider*.
8. The Wizard will locate an ESP on your server's local subnet and display information about that ESP. If your ESP does not yet have an IP address, you must enter the IP address, then click *Next*.
9. The Wizard will display the ESP configuration for final verification. If the IP address you assigned is correct, click *Next*.
10. The Wizard will now copy files from the Windows 2000 ESP driver diskette. During this process, the Equinox ESP driver file is examined for a Microsoft digital signature. If the ESP driver is not signed, a warning message is displayed. To continue the installation, read the warning and then click *Yes*.

If you click *No*, the installation will terminate and the ESP will not be installed on your server.

11. Once all files are copied, click *Finish*.

Your ESP is now installed. Windows 2000 will now install the ESP serial ports.

Windows NT 4.0

1. Navigate to *Settings - Control Panel - Network* to display the Network Control Panel. Select the *Services* tab. Click *Add* to install the ESP driver for Windows NT 4.0.
2. The Control Panel will generate a list of standard Network Services. The Equinox ESP Service is a new network service. Click the *Have Disk* button.
3. The Control panel will ask you to enter the pathname for the disk that contains the ESP Service installation files.
 - a) If you are installing from diskette, enter the drive letter of the diskette drive.
 - b) If you are installing from the Equinox SuperSerial CD, enter the pathname **D:\DRIVERS\ESP\NT**, where D: is your CD-ROM drive letter.
 - c) If you have stored the driver on the NT system or on a network drive, enter the full pathname for the location of the Equinox ESP Service.
4. The Control Panel will copy files from the specified path to the required NT system directories. Once the copy is complete and the driver is installed, the Control Panel will automatically start the Equinox ESP Service. It will also start the ESP Installation Wizard and attempt to locate ESP units on all local subnets.

Using the Installation Wizard, you can:

- Discover and install ESP units on local or remote subnets
- Configure ESP units and assign COM port numbers

- Replace an ESP unit on a local or remote subnet

See the online help in the ESP Installation Wizard for more information.

OpenServer

The following sections contain procedures for installing the ESP driver on an Open Server release 5.0.5a or higher system.

Installing Directly from CD-ROM

1. Mount the CD-ROM volume using the following command:
`mount -f ISO9660,filemode=444 <device> <mount_point>`
 For example, the following command mounts a CD-ROM on drive 1 to /mnt:
`mount -f ISO9660,filemode=444 /dev/cd1 /mnt`
2. Install the driver using the “custom” utility with media image **VOL.000.000**.
3. When custom prompts for Media Device, select *Media Images*.
4. When custom prompts for Image Directory, specify:
`/mnt/DRIVERS/ESP/SCO`
5. Follow the instructions for custom contained in the file:
`/mnt/DRIVERS/ESP/SCO/README`.

Creating OpenServer ESP Installation Diskettes on OpenServer

1. Be sure the **mkdev cdrom** command has been run.
2. Mount the CD-ROM volume using the following command:
`mount -f ISO9660,lower <device> <mount_point>`
 For example, the following command mounts a CD-ROM on drive 0 to /mnt:
`mount -f ISO9660,lower /dev/cd0 /mnt`
3. Run the following commands:
`cd /mnt [or other mount point]`
`./makeunix.sh`
4. Follow the on-screen instructions to build an installation diskette for OpenServer ESP.
5. Once the OpenServer installation diskette is created, refer to the following file for detailed installation instructions:
`/drivers/esp/sco/readme.txt`

Creating OpenServer ESP Installation Diskettes on DOS

1. Load the Equinox SuperSerial Software CD into your CD-ROM drive.
2. Set your default drive to the CD-ROM drive letter.
3. Run the command **MAKEUNIX** and select the appropriate Equinox product and operating system for which diskettes are needed.
4. Once the OpenServer installation diskette is created, refer to the following file for detailed installation instructions:
`/drivers/esp/sco/readme.txt`

Creating OpenServer ESP Installation Diskettes on Windows

1. Load the Equinox SuperSerial Software CD into your CD-ROM drive.
 - If you have autoplay enabled, the Equinox SuperSerial Software Installation screen will appear.
 - If you do not have autoplay enabled, set your default drive to D: and run the command **D:\SETUP**, where D: is your CD-ROM drive letter.
2. Click *UNIX* on the Main Window.
3. Select the UNIX operating system for which you need drivers. Follow the on-screen instructions for creating an installation diskette.
4. Once the OpenServer installation diskette is created, refer to the following file for detailed installation instructions:
`/drivers/esp/sco/readme.txt`

UnixWare

The following sections contain procedures for installing the ESP driver on a UnixWare release 7.0.1a or higher system.

Creating UnixWare ESP Installation Diskettes on UnixWare

1. Mount the CD-ROM volume using the following command:
mount -f cdafs -o fperm=0555,nmconv=c -r/dev/cdrom/c0b0t110/mnt
2. Run the following commands:
cd /mnt [or other mount point]
./makeunix.sh
3. Follow the on-screen instructions to build an installation diskette for UnixWare ESP.
4. Once the UnixWare installation diskette is created, refer to the following file for detailed installation instructions: `/drivers/esp/unixware/readme.txt`

Creating UnixWare ESP Installation Diskettes on DOS

1. Load the Equinox SuperSerial Software CD into your CD-ROM drive.
2. Set your default drive to the CD-ROM drive letter.
3. Run the command **MAKEUNIX** and select the appropriate Equinox product and operating system for which diskettes are needed.
4. Once the UnixWare installation diskette is created, refer to the following file for detailed installation instructions: `/drivers/esp/unixware/readme.txt`

Creating UnixWare ESP Installation Diskettes on Windows

1. Load the Equinox SuperSerial Software CD in your CD-ROM drive.
 - If you have autoplay enabled, the Equinox SuperSerial Software Installation screen will appear.
 - If you do not have autoplay enabled, set your default drive to D: and run the command **D:\SETUP**, where D: is your CD-ROM drive letter.
2. Click *UNIX* on the Main Window.

3. Select the UNIX operating system for which you need drivers. Follow the on-screen instructions for creating an installation diskette.
4. Once the UnixWare installation diskette is created, refer to the following file for detailed installation instructions: `/drivers/esp/unixware/readme.txt`

Linux

The following sections contain procedures for installing the ESP driver on a Linux system.

Creating Linux ESP Installation Diskettes on Linux

1. Mount the CD-ROM volume using the following command:

```
mount -t iso9660<device> <mount_point>
```

For example, the following command mounts the first CD-ROM in a typical environment:

```
mount -t iso9660/dev/cdrom /mnt/cdrom
```
2. Run the following commands:

```
cd /mnt/cdrom [or other mount point]
./makeunix.sh
```
3. Follow the on-screen instructions to build an installation diskette for Linux ESP.
4. Once the Linux installation diskette is created, refer to the following file for detailed instructions: `/drivers/esp/linux/readme.txt`

Creating Linux ESP Installation Diskettes on DOS

1. Load the Equinox SuperSerial Software CD into your CD-ROM drive.
2. Set your default drive to the CD-ROM drive letter.
3. Run the command **MAKEUNIX** and select the appropriate Equinox product and operating system for which diskettes are needed.
4. Once the Linux installation diskette is created, refer to the following file for detailed instructions: `/drivers/esp/linux/readme.txt`

Creating Linux ESP Installation Diskettes on Windows

1. Load the Equinox SuperSerial Software CD into your CD-ROM drive.
 - If you have autoplay enabled, the Equinox SuperSerial Software Installation screen will appear.
 - If you do not have autoplay enabled, set your default drive to D: and run the command `D:\SETUP`, where D: is your CD-ROM drive letter.
2. Click **UNIX** on the Main Window.
3. Select the UNIX operating system for which you need drivers. Follow the on-screen instructions for creating an installation diskette.
4. Once the Linux installation diskette is created, refer to the following file for detailed instructions: `/drivers/esp/linux/readme.txt`

The following sections contain procedures for installing the ESP driver on an AIX release 4.3 or 5.1 system.

Installing Directly from CD-ROM (AIX 5.1 only)

This procedure is valid only on AIX release 5.1 systems.

1. Mount the CD-ROM volume using the following command:
`mount -v cdrfs -o ro /dev/cd0/mnt`
2. Change to the RPMS directory using the following command:
`cd /mnt/RPMS/AIX51`
3. Install the RPM using the following command:
`rpm -ivh ./esp-3.06.aix.5.1.ppc.rpm`
4. Discover and initialize the ESP units using the following command:
`/etc/eqnx/espcfg`

Creating AIX ESP Installation Diskettes on AIX

1. Mount the CD-ROM volume using the following command:
`mount -v cdrfs -o ro /dev/cd0/mnt`
2. Run the following commands:
`cd /mnt`
`./makeunix.sh`
3. Once the AIX installation diskette is created, refer to the following files for detailed installation instructions:
`/drivers/esp/aix43/readme.txt`
`/drivers/esp/aix51/readme.txt`

Creating AIX ESP Installation Diskettes on DOS

1. Load the Equinox SuperSerial Software CD into your DOS CD-ROM drive.
2. Set your default drive to the DOS CD-ROM drive letter.
3. Run the command **MAKEUNIX** and select the appropriate Equinox product and operating system for which diskettes are needed.
4. Once the AIX installation diskette is created, refer to the following files for detailed installation instructions:
`/drivers/esp/aix43/readme.txt`
`/drivers/esp/aix51/readme.txt`

Creating AIX ESP Installation Diskettes on Windows

1. Load the Equinox SuperSerial Software CD.
 - If you have autoplay enabled, the Equinox SuperSerial Software Installation screen will appear.
 - If you do not have autoplay enabled, set your default drive to D: and run the command `D:\SETUP`, where D: is your CD-ROM drive letter.
2. Click *UNIX* on the Main Window.
3. Select the UNIX operating system for which you need drivers. Follow the on-screen instructions for creating an installation diskette.
4. Once the AIX installation diskette is created, refer to the following files for detailed installation instructions:
`/drivers/esp/aix43/readme.txt`
`/drivers/esp/aix51/readme.txt`

Using the Web Interface

The ESP-2 MI web interface can be accessed using any standard web browser with the IP address of the unit as the URL. For example, if an ESP-2 MI has an IP address of 192.168.0.5, entering the URL `http://192.168.0.5` will connect to the web interface.

If the ESP-2 MI does not have an IP address (because it has not yet been configured or the unit has been reinitialized), you may access the unit by using the URL `http://192.1.1.1`.

The predefined IP address (192.1.1.1) is fixed, and unexpected errors may occur if another device has the same IP address or if there is more than one uninitialized ESP-2 MI on the network. After the unit's web interface is accessed, you must configure an IP address before the unit becomes operational. After the IP address is configured, the unit will no longer be accessible with the predefined IP address.

The ESP-2 MI web interface requires an administration password for access. When the unit ships (or after it is reinitialized), there is no configured password. When you access the unit, you are prompted for a username and password. The username field is ignored. If a password has not yet been set, any password will be accepted. Once you enter the web interface, you will be required to configure a password before you can perform any other operations. For more information, see *Changing the Password*.

Some browsers have a feature to remember the password. If this is enabled, you won't need to enter the password at the username/password prompt in future sessions.

About the Web Interface Window

When you access the web interface, the left area of the window contains the Main Menu. Clicking on a Main Menu item brings up the corresponding information in the right area of the window.

When you alter certain values, the EEPROM configuration is modified, but the change does not take effect until the next reboot of the ESP-2 MI. In these cases, a Reboot button will appear in the window. You may reboot the unit at that time, or you may wait and reboot later by selecting Reboot from the Main Menu or by pressing the *RESET* button on the front panel.

Displaying or Changing Network Configuration Values

The Network Configuration window displays the ESP-2 MI unit's IP address, subnet mask and gateway address. You must configure a nondefault IP address for the ESP-2 MI before the unit becomes operational.

To display or change network configuration values:

1. Select *Network Configuration* from the Main Menu.
2. Enter a valid value in the IP Address, Subnet Mask and Gateway Address fields. The addresses must be entered in standard IP dot notation. The gateway address must be in the same subnet as the IP address.
You cannot set the IP address to: a Class A address of 0.0.x.x, a loopback address of 127.x.x.x, the default value of 192.1.1.1 or an address at or above 248.x.x.x.
3. If you changed any values, click the *Apply* button. The EEPROM configuration is modified, but the change does not take effect until the next reboot of the ESP-2 MI. To reboot, click the *Reboot* button. If the IP address had not been previously set, the unit reboots automatically.

Displaying or Changing Port Configuration Values

The Port Configuration window displays the interface type for each port. The interface type is set with jumpers inside the chassis; it cannot be configured in software. If a port is configured for RS-485, the display indicates the current transfer mode, which can be changed via this window.

To display or change port configuration values:

1. Select *Port Configuration* from the Main Menu.
2. To see the procedure for changing the jumpers that set the interface type, click the *show how to change jumpers* link.
3. The Interface Type field indicates the port's interface type: RS232, RS422 or RS485.
4. The Transfer Mode (RS485) field indicates the current transfer mode if the Interface Type is RS485. (If the port uses another interface type, this field indicates Not Applicable). To change the transfer mode, select *RTS* or *ADDC* from the Transfer Mode (RS485) listbox.
5. If you changed the transfer mode, click the *Apply* button. The EEPROM configuration is modified, but the change does not take effect until the next reboot of the ESP-2 MI. To reboot, click the *Reboot* button.

Displaying Hardware Information

The Hardware Information window displays the following items:

- Model number
- Hardware revision number
- Number of serial ports
- EEPROM revision number
- Amount of SDRAM in megabytes
- Amount of FLASH memory in megabytes

- Amount of EEPROM configuration memory in kilobytes
- Unit's MAC address
- Unit's serial number

This information cannot be modified.

To display hardware information, select *Hardware Information* from the Main Menu.

Displaying or Updating FLASH Memory

The Flash Update window displays information about the current images loaded in FLASH memory. You may update the embedded application image or bootstrap image in FLASH memory. Prior to doing a FLASH image update, you must configure a TFTP server on the target server system and install the new FLASH image in the appropriate location, which is usually relative to the tftp root directory.

To display FLASH image information or update an image:

1. Select *Flash Update* from the Main Menu.
The Application Image section includes the version number, size and internal slot number for the Primary embedded application image. The previously installed image is maintained as a backup; the Backup field contains its values.
The Bootstrap Image section indicates the version number, size and internal slot number for the embedded kernel image. The previously installed image is maintained as a backup. The Bootloader field indicates the version number and size of the bootloader image.
2. To update the application image:
 - a. Click the *Update Application* button. The Application Image Update window appears.
 - b. Enter the IP address of the TFTP server and the application image filename.
 - c. Click the *Apply* button. The update process can take up to 30 seconds to complete. After the update completes, status will be displayed.
3. To update the bootstrap image:
 - a. Click the *Update Bootstrap* button. The Bootstrap Image Update window appears.
 - b. Enter the IP address of the TFTP server and the bootstrap image filename.
 - c. By default, the bootloader will only be updated if the version number of the new image is greater than the version number currently installed.
If you want to downrev the bootloader (that is, use a previous/earlier version), enable the *Update Bootloader Regardless of Version* checkbox. It is generally recommended that this checkbox be disabled.
 - d. Click the *Apply* button. The update process can take up to 30 seconds to complete. After the update completes, status will be displayed.

Displaying or Changing Configurable Features

The Configurable Features window displays the current settings of the following features:

- Acquire IP address via DHCP - When enabled, the IP address is obtained via DHCP/BOOTP. When disabled, the IP address can only be obtained directly using the UDP protocol (espcfg or NT driver coininstaller) or via the web interface. This feature is enabled by default.

- Allow administrative functions via SNMP - When enabled, the SNMP interface is used for monitoring and some configuration of the ESP-2 MI. When disabled, tools such as EquiView Plus and espdiaq will not work. This feature is enabled by default.
- Allow web based interface - When enabled, the interface being used is available. When disabled, this interface is not available. This feature is enabled by default.
- Allow telnet based config/debug utility - When enabled, a Telnet session with the ESP-2 MI can be used for configuration and debugging. When disabled, Telnet sessions are not allowed for configuration and debugging. This feature is disabled by default.

When the ESP-2 MI is reinitialized, all configurable features are restored to their default settings.

To view or change configurable features:

1. Select *Configurable Features* from the Main Menu.
2. Click the *Enabled* or *Disabled* radio button next to the feature(s) to be changed.
3. If you changed any setting, click the *Apply* button. The EEPROM configuration is modified, but the change does not take effect until the next reboot of the ESP-2 MI. To reboot, click the *Reboot* button.

Displaying General Statistics

The General Statistics window displays the following items:

- Uptime - Number of days, hours, minutes and seconds since the unit was last rebooted.
- Idle Time - Number of days, hours, minutes and seconds of idle time since the unit was last rebooted. Idle time is defined as time when the ESP-2 MI is not performing any active operations such as processing serial or network data.
- Network Interface Counts - Number of bytes transmitted and received plus the number of transmit and receive errors that have occurred since the unit was last rebooted.
- UDP - Number of UDP datagrams transmitted and received plus the number of UDP receive errors
- Number of TCP packets transmitted and received plus the number of TCP receive errors

To display general statistics, select *General Statistics* from the Main Menu.

Displaying Port Statistics

The Port Statistics window displays the following current operational information for each ESP-2 MI port:

- Status - Port status flags.
- Server - IP address of the server that has the port open.
- Receive Bytes - Number of bytes received since the unit was last rebooted.
- Transfer Bytes - Number of bytes transmitted since the unit was last rebooted.
- Signals - Current value of the RS-232 signals: RTS, CTS, DTR, DSR and CD. A signal is listed in the display only if it is asserted (high).
- Baud rate/Size/Parity - Baud rate, data size (5-8 bits), parity (N=none, O=odd, E=even, M=mark or S=space) and number of stop bits (1 or 2).

- Frame/Parity/Overrrun - Number of framing errors, parity errors and overruns since the unit was last rebooted.

This window refreshes every five seconds.

To display port statistics, select *Port Statistics* from the Main Menu.

Displaying Connected Servers Information

The Connected Servers window displays the following information about the servers that are connected to the ESP-2 MI.

- IP Address - Server's IP address
- UDP State - Current UDP connection state
 - Initiating - Server is establishing a connection
 - Active - Server and ESP-2 MI are connected
 - Timeout - Connection is being dropped due to lost communication with the server
 - Terminated - Connection has been dropped
- TCP State - Current TCP connection state
 - Initiating - Server is establishing a connection
 - Connected - Server and ESP-2 MI are connected
 - Terminated - Connection has been dropped
- Connect Time - Number of days, hours, minutes and seconds server has been connected
- Timeout Period - UDP time-out value; that is, amount of time before a connection is dropped if no heartbeat messages are received

This window refreshes every five seconds.

To display connected server information, select *Connected Servers* from the Main Menu.

Rebooting the Unit

The Reboot window allows you to reboot the ESP-2 MI. A reboot is usually required after changing any configuration values stored in EEPROM or after downloading new FLASH images.

To request a reboot:

1. Select *Reboot* from the Main Menu.
2. Click the *Reboot* button.

After the reboot, the web interface will try to reconnect to the unit. If this fails, or if the web interface does not return within 30 seconds, direct your browser to the ESP-2 MI IP address.

You may also reboot the ESP-2 MI by pressing the *RESET* button on the front panel.

Reinitializing the Unit

The Initialize window allows you to reset all configurable values to their factory defaults, including the IP address and password.

To request a reinitialization:

1. Click *Initialize* from the Main Menu.
2. Click the *Re-Initialize* button.

After the reinitialization and reboot, the web interface will try to reconnect to the unit, using the predefined IP address (192.1.1.1). If this fails, or if the web interface does not return within 30 seconds, direct your browser to the predefined IP address (192.1.1.1).

You may also reinitialize the ESP-2 MI using the *INIT* button on the front panel. See *Reinitializing and Resetting the Unit* for more information.

Changing the Password

The Change Password window allows you to change the password.

To change the password:

1. Select *Change Password* from the Main Menu.
2. Enter the new 5-32 character password in the New Password field. Passwords are case-sensitive and can contain any alphanumeric characters.
3. Repeat the new password in the New Password (re-enter) field.
4. Click the *Apply* button.

Verification will check that both password entries match and contain a valid number of characters, then the EEPROM configuration will be updated. A reboot is not required. The new password will be required the next time the ESP-2 MI web interface is accessed.

Declaration of Conformity

Manufacturer's Name: Equinox Systems
an Avocent Company

Manufacturer's Address: One Equinox Way
Sunrise, Florida 33351-6709 USA

declares, that the products

Product Name: Ethernet Serial Provider

Model Name: ESP-2 MI

Product Options: All

Year of Manufacture: 2003-

conform to the following Product Specification:

Safety: EN 60950
UL 60950 3rd Ed., CAN/CSA C22.2 No. 60950-00

EMC: EN 55022: 1998 Class A
EN 610003-3
EN 55024: 1998
FCC Part 15 Class A

Supplementary Information:

The products herewith comply with the requirements of the Low Voltage Directive, 73/23/EEC and the EMC Directive 89/336/EEC, including amendments by the CE-marking Directive 93/68/EEC.

NOTE: To maintain EN 55024 Product Family Immunity compliance, it is recommended that quality Unshielded Twisted Pair (UTP) or Shielded Twisted Pair (STP) cabling be used, such as that recognized by the ANSI/TIA/EIA-568-A Standard for the serial port media.

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Federal Communication Commission (FCC) Statement

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in the residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canada

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

European Union

WARNING; This is a Class A product. In domestic environment, this product may cause radio interference in which case the use may be required to take adequate measures.

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